FISHING FOR 'BOMBAY DUCK' (*HARPODON NEHEREUS*).

Destructive Netting Methods.

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(*With 1 plate and 2 text figures.*)

The object of this paper is to place on record a few observations regarding the trade in 'Bombay duck' or Bombils (*Harpodon nehereus*), the methods of their capture and the manner of their disposal for commercial purposes. This paper is meant to be only an outline of suggestions for the future development of this valuable fishery. It is not a survey of the entire industry round Bombay, but is confined to the data gathered at Colaba only, which, during the monsoon is the main fishing centre for this fish. The first thing that strikes the observer is the appalling waste of the fish and the reckless and primitive methods used in fishing for them.

The paper deals with special reference to these two features, for the present writer, who has personally accompanied the fishermen in their operations, feels that the introduction of more modern methods would enable the fishery to be put on a more organised basis. For this reason it would be best to begin by referring to the existing methods of obtaining the fish.

The peak period of the fishing season in Bombay (for 'Bombay duck') is from June to September, and at this time the inshore waters are the haunts of innumerable kinds of fishes, both large and small, and crustaceans.

The net employed to capture the fish is a device known as the bag net, which in the vernacular (Marathi) of the fishermen is called the *dol*. The bag, which is of heavy cotton netting, is conical in shape, the base, which is the open end, being rectangular. The length of the net from the rim of the base to the tapering closed end is about 150 feet with a circumference at the mouth varying from 180 to 230 feet. The mesh of the net is not uniform throughout. At the mouth, the net has large meshes, which are about four inches in diameter. As the net tapers, the meshes become smaller in size and, towards the end are so narrow that the escape of the tiniest fish is rendered almost impossible. A peculiar feature of the meshing is that with the inrush of the water the interstices get completely closed. The net then resembles a hermetically closed cone. The pressure at the tapering end is very great both as a result of the inrushing water and the catch which is driven into it. In order to withstand this dual pressure this portion of the net is double (consisting of one bag enclosed within the other). Four men are usually required to operate

the net, and when the sea is very stormy, the services of a fifth man are at times requisitioned.

Method of Setting Net.

The net is worked entirely by the tides. It is set in the water, but in such a position as to face the incoming current. As the tide starts to recede, the position of the net is reversed, the open end now facing the shore. The object in both cases is for the fish to be propelled into the net by the force of the current.

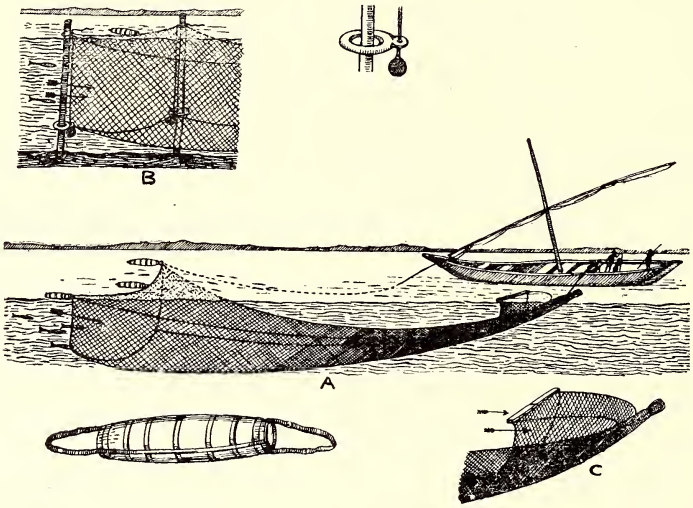
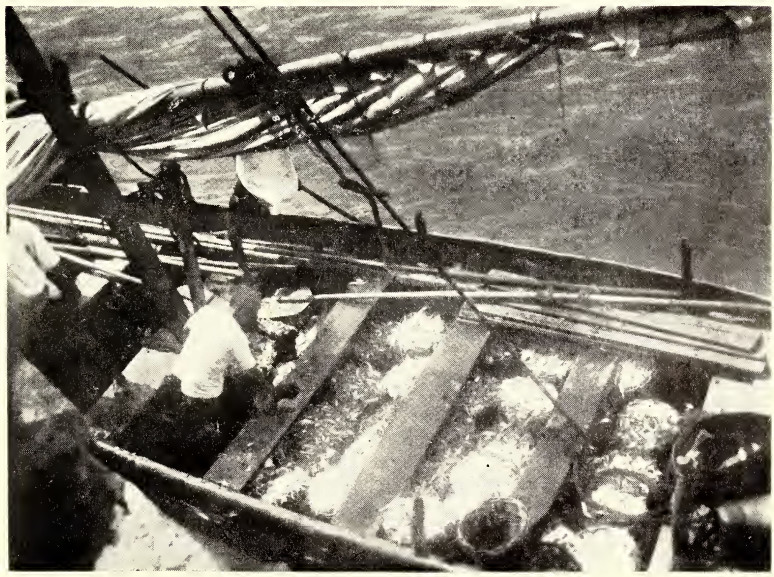


Fig. 1.

A complete "dōl" outfit. The dōl as used, (*a*) for inshore fishing; (*b*) for fishing in deeper waters; (*c*) the clever device known as "khuda" referred to in the text.

In setting the net, the top ends of the mouth are fastened to large buoys, which are permanently fixed by chains to huge rocks at the sea bottom. Besides this, the centre of the upper edge of the mouth is secured to a temporary float, which prevents the top of the net from sagging. The lower edge of the net hangs freely, the pressure of the rushing current keeping the mouth wide open. The fish are thus captured by being driven into the tapering or bag end, the opening there being closed with a rope knotted round it. The rope is long enough to enable the bag to rest on the sea floor. The fishermen are present on the grounds during the fishing operations and usually take a location in proximity to the bag end. In order to prevent the boats from being swept away from the scene of the fishing operations, a rope is tied from the bow of the boat to one of the fixed side buoys. This is the method followed in the case of the inshore fishing. In deeper waters a similar course is followed except that the place of the side buoys chained to the sea bottom is

A Bombay fisherman's sail boat as employed in the Bombay Duck fishery.



A boat come back to shore with a part of the day's catch. During the height of the fishing season many tons of fish were landed in the course of a day.

taken by two long and stout palisades, each about 100 feet in length and ten feet in diameter. These stakes are upright and formed by binding a few tree trunks till they are of the required length. They are then driven about twenty-five feet deep into the sea floor and the vertical sides of the net are attached to them. A buoy is secured to the upper edge of the mouth, as in the case of the inshore fishing, in order to prevent sagging. The time of fishing whether inshore or in deeper waters, varies from day to day, depending on the tides.

Device to Protect Catch.

The description of the *dōl* would be incomplete without reference to a clever device (known in Marathi as the *khuda*) of the fishermen to protect their catch from the depredations of sharks and other larger fish which feed on smaller ones. The ravages of these fish are not only confined to attacking the smaller fish, but also extend to ripping open the net and thus affording a means of escape to the catch. In order to safeguard themselves against this menace, the fishermen have devised a semi-oval net whose purpose is to prevent larger fish from entering the bag net. The upper side of the *khuda* is secured to a rod, which by floating keeps the mouth open. Its entire under surface is tied to the four corners of the dorsal surface of the bag end of the *dōl*. The large fish are trapped in this and thus the fishermen derive a dual advantage inasmuch as these nets protect their catch as well as prevent the possibility of damage to their nets. Moreover the fish trapped are a good source of revenue as they also are sold for edible purposes.

The most serious drawback to this net is that it is non-selective in action. All kinds of fish are gathered irrespective of their size or commercial utility. The resultant wastage of this method is appalling, the nets often taking very many more fish than are required to supply the local demand for fresh fish. The method thus obviously entails the destruction of thousands of 'Bombay duck' daily which die long before they are rejected, for the fish are pressed to the bottom of the bag where they are lumped into a huge mass. They seldom recover and even if they do, they are thrown overboard together with the dead specimens.

Ruthless Destruction of Catch.

This ruthless destruction lasts not only during the season, when there is a demand for 'Bombay duck' but continues long after pomfrets, prawns and other better varieties are in season and the demand for 'Bombay duck' has long ceased. As the close of the monsoon approaches, there is a sharp falling off in the quantity of the catch of these fish and inshore fishing is gradually discontinued until in October no one fishes for them. Moreover, even during the peak period when there is a demand for them, none but the largest individuals are taken. The smaller ones, which are commercially useless, are cast overboard. Such a state of affairs would not be tolerated in any of the countries of Europe and

America, where the fishery laws lay down the different gear required in fishing for various fishes and prescribe the standard gauge of meshes for each of them.

In October the Bombay ducks decrease decidedly in abundance, the inshore fishing season ceases by the middle of October and the fishermen now venture further out into the deeper waters in pursuit of pomfrets and other bigger fish. The usual fishing grounds are near Khandairy about 25 miles away from Bombay. Here again, in addition to the drift nets used for pomfrets, the *dōl* is employed, as it is more convenient and is a labour-saving device. It often happens that besides other fish, the *dōl* takes in 'Bombay duck' but these are usually discarded as there is no demand. Moreover there is the risk of putrefaction as the fish is very delicate and the boats have to make a tedious journey of 25 miles. Sometimes the whole catch consisting of pomfrets, 'Bombay duck' and other fish have to be thrown away when the boats are becalmed, as they depend chiefly on wind and sail for their progress.

Collection of Statistics.

The statistics collected by the present writer during the current year give but an inadequate idea of the relatively meagre quantity to Bombay ducks that find their way into the market in proportion to the huge amount captured annually.

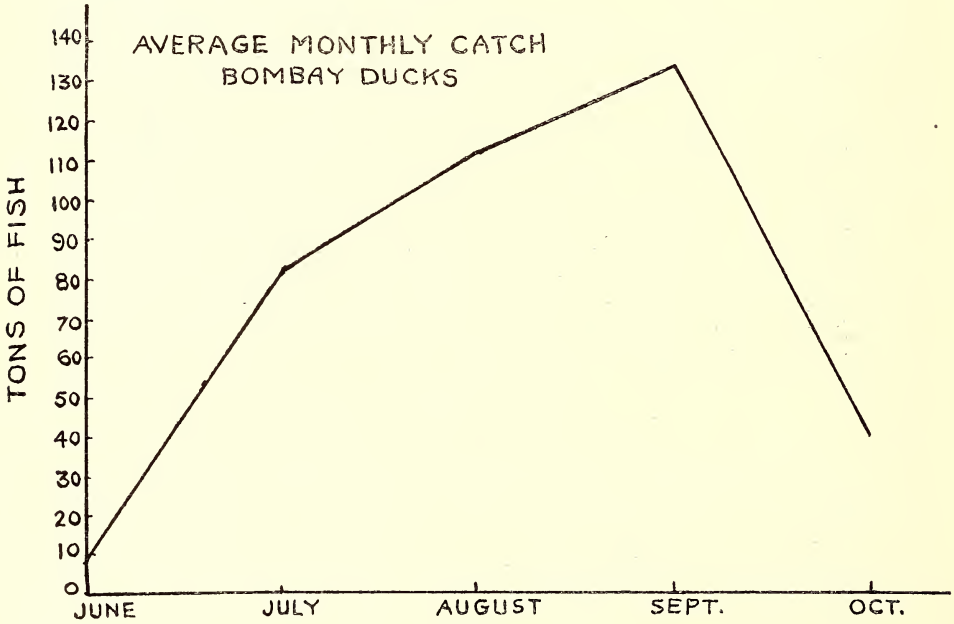


Fig. 2.

During the inshore fishing season at Bombay in 1931 (this year the fishing season began on June 16 and ended somewhat later than usual on about October 15), fifty boats owned by nineteen